Claims

1. An apparatus for restoring or maintaining flow through a vessel or duct within a living body, comprising:

a graft conduit having a first and second ends and an interior lumen extending therebetween; and

first and second anchor members coupled to said first and second ends of said graft conduit, said anchor members capable of being deployed within said vessel or duct to establish a flow path through said interior lumen of said graft.

2. The apparatus of Claim 1 and further, wherein said first and second anchor members are coupled to said first and second ends of said graft conduit with first and second coupling elements.

3. The apparatus of Claim 2, wherein the first and second coupling elements are elastomeric.

4. The apparatus of Claim 3, wherein the first and second coupling elements serve to bias the first and second ends of the graft conduit substantially into abutment against the interior lumen of the vessel or duct.

5. The apparatus of Claim 1, wherein the graft conduit isolates a portion of the interior lumen of the vessel or duct from the flow of blood therethrough.

6. The apparatus of Claim 1, wherein at least one of the first and second anchor members is deployable via self-expansion or forced-expansion.

7. The apparatus of Claim 1, wherein said first and second anchor members are deployable via forced-expansion, and wherein said graft conduit and said first and second anchor members are delivered into the vessel or duct via a deployment assembly having at least two expansion members.

8. The apparatus of Claim 7, wherein the deployment assembly comprises a delivery catheter having first and second balloons capable of being inflated to deploy the first and second anchor members within the vessel or duct.

9. The apparatus of Claim 1, wherein the graft conduit comprises a length of bio-compatible synthetic conduit.

10. The apparatus of Claim 1, wherein the graft conduit comprises a length of autologous blood vessel obtained by one of harvesting said autologous blood vessel from the living body and growing said autologous blood vessel using bio-engineering techniques.

11. The apparatus of Claim 1, wherein the graft conduit is dimensioned having a length ranging from 5 mm to 50 mm.

12. The apparatus of Claim 1, wherein the graft conduit is dimensioned having a diameter ranging from 2 mm to 5 mm.

13. The apparatus of Claim 1, wherein the graft conduit is dimensioned having a wall thickness ranging from 0.01 mm to 0.5 mm.

14. The apparatus of Claim 1, wherein the anchor members are constructed to provide sufficient rigidity to maintain the first and second ends of said graft conduit open upon deployment within said vessel or duct.

15. The apparatus of Claim 1, wherein the anchor members are constructed from at least one of stainless steel, a bio-compatible composite, and Nitonol.

16. The apparatus of Claim 1, wherein the anchor members are dimensioned having a length ranging from 0.5 mm to 50 mm.

17. The apparatus of Claim1, wherein the anchor members are dimensioned having an initial diameter ranging from 1 mm to 3 mm.

18. The apparatus of Claim 1, wherein the anchor members are dimensioned having a diameter upon deployment ranging from 2 mm to 5 mm.

19. The apparatus of Claim 1, wherein the anchor members are dimensioned having a wall thickness ranging from 0.02 mm to 0.2 mm.

20. The apparatus of Claim 3, wherein the coupling elements are constructed from at least one of silicone and any polymer or composition having contractility characteristics.

21. The apparatus of Claim 3, wherein the coupling elements are dimensioned having a width when deployed of approximately 0.05 mm and a width prior to deployment of approximately 0.15 mm.

22. The apparatus of Claim 1, wherein the anchor members are deployed via self-expansion and are contained within a first tubular élement during introduction into the vessel or duct.

23. The apparatus of Claim 22, wherein the anchor members are deployed through the use of a second tubular element disposed within said first tubular element.

24. The apparatus of Claim 23, wherein the second tubular element has a duck-bill portion at its distal end.

25. The apparatus of Claim 23, wherein the second tubular element has a plurality of elongate elements extending from a distal end thereof.

26. The apparatus of Claim 25, wherein said elongate members are retractable within lumens formed in a wall of said second tubular element.

27. The apparatus of Claim 1, wherein said first anchor member is deployed via self-expansion and said second anchor member is deployed via forced-expansion.

28. The apparatus of Claim 27, wherein said first and second anchor members are disposed within a first tubular element during introduction into said vessel or duct.

29. The apparatus of Claim 28, wherein said first and second anchor members are disposed over a second tubular element having an expansion member disposed within said second anchor member.

30. The apparatus of Claim 1, wherein at least one of said first and second anchor members is substantially longer than the other of said first and second anchor members and deployable via forced-expansion.

31. The apparatus of Claim 30, wherein said first anchor element is deployable via self-expansion and substantially shorter than said second anchor element, and said second anchor element is deployable via self-expansion and substantially longer than said first anchor element and deployable via forced-expansion.

32. The apparatus of Claim 31, wherein during introduction into the vessel or duct the first anchor element is retained within a tubular element during introduction and said second anchor element is retained along the exterior of the tubular element.

33. The apparatus of Claim 32, wherein said tubular element includes an expansion member for forcibly expanding said second anchor member within said vessel or duct.

34. The apparatus of Claim 33, wherein said tubular element may be removed from said vessel or duct following the deployment of said second anchor member, thereby allowing said first anchor member to deploy via self-expansion.

35. A method of manufacturing a graft assembly for introduction into a living body, comprising the steps of:

providing a length of graft conduit having a first end, a second end and a lumen extending therebetween;

coupling a first anchor member to said first end of said graft conduit; and

coupling a second anchor member to said second end of said graft conduit.

36. The method of manufacture of Claim 35, wherein said graft conduit comprises a length of bio-compatible synthetic conduit.

37. The method of manufacture of Claim 35, wherein the graft conduit comprises a length of autologous blood vessel obtained by one of harvesting said autologous blood vessel from the living body and growing said autologous blood vessel using bio-engineering techniques.

38. The method of manufacture of Claim 35, wherein the graft conduit is dimensioned having a length ranging from 5 mm to 50 mm.

39. The method of manufacture of Claim 35, wherein the graft conduit is dimensioned having a diameter ranging from 2 mm to 5 mm.

40. The method of manufacture of Claim 35, wherein the graft conduit is dimensioned having a wall thickness ranging from 0.01 mm to 0.5 mm.

41. The method of manufacture of Claim 35, wherein the anchor members are constructed to provide sufficient rigidity to maintain the first and second ends of said graft conduit open upon deployment within a vessel or duct.

42. The method of manufacture of Claim 35, wherein the anchor members are constructed from at least one of stainless steel, a bio-compatible composite, and Nitonol.

43. The method of manufacture of Claim 35, wherein the anchor members are dimensioned having a length ranging from 0.5 mm to 50 mm.

44. The method of manufacture of Claim 35, wherein the anchor members are dimensioned having an initial diameter ranging from 1 mm to 3 mm.

45. The method of manufacture of Claim 35, wherein the anchor members are dimensioned having a diameter upon deployment ranging from 2 mm to 5 mm.

46. The method of manufacture of Claim 35, wherein the anchor members are dimensioned having a wall thickness ranging from 0.02 mm to 0.2 mm.

47. The method of manufacture of Claim 35, wherein said anchor members are coupled to said graft conduit via coupling elements.

48. The method of manufacture of Claim 47, wherein said coupling elements are elastomeric.

49. The method of manufacture of Claim 47, wherein the coupling elements are constructed from at least one of silicone and any polymer or composition having contractility characteristics.

50. The method of manufacture of Claim 47, wherein the coupling elements are dimensioned having a width when deployed of approximately 0.05 mm and a width prior to deployment of approximately 0.15 mm.

51. The method of manufacture of Claim 47, wherein said coupling elements are connected to said anchor members and said graft conduit via at least one of adhesives and ultrasonic welding.

52. A system for deploying a graft conduit within an intraluminal target site, comprising:

a graft conduit having a first anchor member coupled to a first end and a second anchor member coupled to a second end, said first and second anchor members being capable of deployment via forced-expansion; and

a tubular member having at least one expandable member for selectively expanding said first and second anchor members and thereby opening said first and second ends of said graft conduit within said intraluminal target site.

53. A system for deploying a graft conduit within an intraluminal target site, comprising:

a graft conduit having a first anchor member coupled to a first end and a second anchor member coupled to a second end, said first and second anchor members being capable of deployment via self-expansion; and

a tubular member disposed over said first and second anchor members during introduction into said intraluminal target site and removable thereafter to permit said first and second anchor members to expand and thereby open said first and second ends of said graft conduit within said intraluminal target site.

54. A system for deploying a graft conduit within an intraluminal target site, comprising:

a graft conduit having first and second ends, a first anchor member coupled to said first end, a second anchor member coupled to said second end, said first anchor

member being capable of deployment via self-expansion and said second anchor member being capable of deployment via forced-expansion; and

a tubular member having at least one expandable member, said tubular member disposed over at least one of said first and second anchor members during introduction into said intraluminal target site and removable thereafter to permit said at least one of said first and second anchor members to expand, and said expandable member for selectively expanding said second anchor member, to collectively open said first and second ends of said graft conduit within said intraluminal target site.

55. An apparatus for lining an intraluminal target site, comprising:

a lining having a first anchor member and a second anchor member, said first anchor member being self-expanding and said second anchor member being forcibly-expanding; and

a delivery element having at least one expandable member and at least one restraining member, said at least one restraining member for initially restraining said first anchor member and thereafter being removed to deploy said first anchor member, and said at least one expandable member for expanding to forcibly deploy said second anchor member.

56. The apparatus of Claim 55, wherein said second expandable member comprises a balloon dimensioned to be selectively inflated to deploy said second anchor member.

57. The apparatus of Claim 55, wherein said delivery element comprises an elongated tubular member having an inner lumen capable of receiving said first anchor member in a constrained state.

58. The apparatus of Claim 57, wherein said elongated tubular member is equipped having said at least one expandable member disposed along a portion of an exterior surface thereof.

59. The apparatus of Claim 58, wherein at least a portion of said second anchor member is disposed along at least a portion of an exterior surface of said expandable member.

60. The apparatus of Claim 55, wherein said second anchor member is substantially longer than said first anchor member.